



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

REGION 4  
ATLANTA FEDERAL CENTER  
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ATLANTA, GEORGIA 30303-8960

Date: June 15, 2009

Ms. Jennifer Harris, P.E.  
North Carolina Turnpike Authority  
5400 Glenwood Avenue, Suite 400  
Raleigh, North Carolina 27612

SUBJECT: Federal Draft Environmental Impact Statement for the Monroe Connector/Bypass, From I-485 at US 74 to US 74 Between the Towns of Wingate and Marshville, Mecklenburg and Union Counties, North Carolina; TIP Project Nos.: R-3329/R-2559; FHWA-E40825-NC; CEQ No.: 20090126

Dear Ms. Harris:

The U.S. Environmental Protection Agency Region 4 (EPA) has reviewed the subject document and is commenting in accordance with Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA). The North Carolina Turnpike Authority (NCTA) and the Federal Highway Administration (FHWA) are proposing to construct an approximate 20-mile, multi-lane, median divided bypass and toll facility from I-485 at US 74 to US 74 between the Towns of Wingate and Marshville in Mecklenburg and Union Counties. The preface of the Draft Environmental Impact Statement (DEIS) includes a detailed project history.

EPA notes that the project had been in the NEPA/Section 404 Merger 01 process when the R-3329 and R-2559 projects were with the North Carolina Department of Transportation (NCDOT). The NCTA is utilizing the agency coordination process under SAFETEA-LU Section 6002 since it has been proposed as a toll facility. EPA provided detailed scoping comments under this process in a letter dated February 14, 2007.

EPA notes that 'off-set blocks' that give regulatory or technical background information was utilized effectively in the DEIS. Tables, pictures and graphics were also generally used effectively. However, EPA also noted a change in the standard format for this DEIS. EPA has attached detailed technical review comments (See Attachment A). EPA's primary environmental concerns regarding Clean Water Act and Clean Air Act provisions remain unresolved.

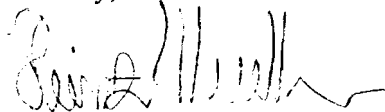
EPA has rated the preferred alternative DSA D as 'EO-2', Environmental Objections with additional information being requested in the final document. EPA's review has identified significant environmental impacts that should be avoided in order to adequately protect the environment. The basis for our environmental objections include (1) that the proposed action might violate or be inconsistent with achievement or maintenance of a national environmental standard under the Clean Air Act's National Ambient Air Quality Standards (NAAQS), and (2) while applicable standards may not be

violated, there is a potential for significant environmental degradation under the Clean Water Act and Section 404(b)(1) Guidelines. NCTA and FHWA should consider substantial changes to the preferred alternative or consideration of other project alternatives, including interim Transportation System Management (TSM) approaches for existing deficiencies on US 74.

Prior to the issuance of a Final Environmental Impact Statement (FEIS) and Record of Decision, NCTA and FHWA need to demonstrate that the proposed new location project will be covered under an approved State Implementation Plan (SIP) and will be in conformity with Section 176(c) of the Clean Air Act Amendments for the 8-hour ozone standard. NCTA and FHWA need to further demonstrate avoidance, minimization, and compensation of environmental impacts to jurisdictional waters of the U.S. and demonstrate that water quality to Section 303(d) impaired streams is not further degraded as a direct result of this project and its associated indirect and cumulative impacts. EPA also continues to have substantial environmental concerns with the build alternatives with respect to Mobile Source Air Toxics (Please see Attachment B).

EPA staff, including Mr. Christopher Militscher and Ms. Kathy Matthews of EPAs' Wetlands Section will continue to work with you and FHWA and other agencies on the continued environmental coordination activities for this project. Please feel free to contact Mr. Militscher of my staff at (919) 856-4206 or Ms. Matthews at (919) 541-3062 should you have specific questions concerning EPA's comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Heinz J. Mueller", with a stylized flourish at the end.

Heinz J. Mueller, Chief  
NEPA Program Office

Cc: J. Sullivan, FHWA  
K. Jolly, USACE  
B. Wrenn, NCDENR  
G. Thorpe, NCDOT

w/Attachments A and B

Attachment A  
DEIS Detailed Review Comments  
Monroe Bypass/Connector Toll Facility  
Mecklenburg and Union Counties  
R-3329/R-2559

Purpose and Need

EPA has reviewed the proposed project's purpose and need as summarized in Section 1.2 of the DEIS. The primary needs for the proposed project are: existing and projected roadway capacity deficiencies and the inability to serve high-speed regional travel consistent with the designations and goals of the State and Local Transportation Plans. EPA recognizes the desire to build a multi-lane freeway with access control and grade separations (i.e., Interchanges) consistent with the Strategic Highway Corridor (SHC) initiative. The DEIS references that the standard right of way for a controlled-access facility is approximately 350 feet (Page 2-18). EPA understood that a typical multi-lane, new location freeway facility in North Carolina is approximately 300 feet. This potential increase in estimated right of way of approximately 14% is also potentially increasing impacts to residences, businesses, farms and the natural environment by a similar proportion. It is also important to note that the existing 4 to 6-lane facility has a right of way width of only 60 feet and that substantial right of way ("at least 200 feet") is estimated to be required by NCTA and FHWA to upgrade the existing facility.

EPA recognizes some of the existing roadway capacity deficiencies, including average travel speeds during peak hour range from 20 to 30 miles per hour (mph) using current data (2007). EPA understands that the existing US 74 highway in the project study area is a 4 to 6-lane arterial facility with 26 at-grade signalized intersections and many additional un-signalized intersections. The DEIS also cites that there are numerous commercial and residential driveway connections. Essentially, the US 74 corridor within the project study area has had no or only partial control of access requirements. The DEIS also cites that congestion is high with [approximately] one-third of the intersections currently operating at an unacceptable Level of Service (LOS E or F) during peak hour.

Of the 26 signalized intersections shown in Table 1-6, the 2007 LOS shows 21 intersections operating at LOD D or better in the a.m. peak period. The 2007 LOS p.m. peak period shows 19 out of the 26 intersections operating at LOD D or better. There are several problematic intersections identified in Table 1-6, including Stallings Road, Indian Trail-Fairview Road, Unionville-Indian Trail Road, Sardis Church Road and North Rocky River Road. Both a.m. and p.m. peak period was LOS F at these intersections. The DEIS did not evaluate any individual design and grade separation improvements at these locations that would reduce delays and improve LOS on existing US 74.

The DEIS does not identify any specific major facility improvements within the last 10 years to the US 74 corridor through the Monroe or western Union County area (Section 1.8.1 of the DEIS). The DEIS states: "*Few, if any, access management*

*techniques have been applied to this roadway*". Traffic signal spacing ranges from less than a ¼ of a mile to a maximum of 2 ½ miles. Section 1.8 details existing roadway conditions and operations and provides a detailed description and excellent photographs of the congestion problems along existing US 74. Table 1-4 includes the posted speed limits for the various segments of existing US 74 that range from 35 to 55 miles per hour. The DEIS also identifies the average travel times and speeds through the US 74 corridor, including westbound a.m. peak and eastbound p.m. peak hours. The DEIS also provides a great deal of information on the Strategic Highway Corridor (SHC) initiative and the importance of the corridor between the largest port facility of Wilmington and the State's largest city of Charlotte. The DEIS also identifies the importance of Charlotte as a trucking hub in the southeast and that 13 percent of the 2007 traffic along existing US 74 was truck traffic.

EPA acknowledges the comments in the DEIS concerning the past lack of priority for the proposed project and that 'traditional' state transportation and federal-aid highway funds have not been nor are currently available for the Monroe Bypass/Connector. On the east end of the project, the DEIS states that the proposed project would terminate on US 74 between the towns of Wingate and Marshville. The DEIS indicates that this is where existing and projected traffic volumes decrease and the study area transitions to a more rural character. These same rural conditions existed in western Union County prior to the Charlotte Outer Loop eastern segments and other roadway improvements being built in and around Matthews, Indian Trail, etc.

EPA notes that the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) has identified improvements to the US 74 corridor in its 2030 Long-Range Transportation Plan (LRTP) for the project study area and considers them a high priority project. EPA staff were directly involved with MUMPO on its Draft 2035 LRTP Roadway Ranking Priority List from the aspect of early environmental coordination. According to this more recent project priority list by MUMPO, the Monroe Connector/Bypass project was assigned a ranking of 175 (out of approximately 340 total projects). There are several references in the DEIS to MUMPO and other government entities supporting a new location, multi-lane SHC facility. It is important to note the CEQ citation at 40 CFR Section 1502.2(g), that environmental impact statements shall serve as the means of assessing the significant environmental impacts and effects of proposed agency actions, rather than justifying decisions already made (Page 7-21 of the DEIS: *"Construction of this facility [as a New Location Alternative] has been anticipated for many decades, and it has been programmed into land use plans and other regulations; in addition, local officials are targeting development for the major feeder roads in anticipation of the project"*).

The DEIS states that the public comments on the Monroe Connector/Bypass project have indicated an overwhelming acceptance of tolls as a way to accelerate construction of the project and pay for operating and maintaining the facility. EPA notes the July 30, 2007, public workshop comment form responses in Section 9.1 of the DEIS. Other public outreach, including local officials meetings, open houses, small group meetings, and other forms of public participation are also outlined in this section. It is

unclear from this section of the DEIS that the public was fully informed of the relatively low priority that these projects (R-3329/R-2559) had prior to it being identified as a potential toll facility.

The DEIS identifies the State law prohibition of tolling existing roadways and requires a free alternative route (NCGS 136.89-197). EPA understands from recent reports that this law could potentially be amended in the future for the I-85 improvements and bridge project over the Yadkin River. One of EPA's main concerns regarding the purpose and need for the proposed new location US 74 tollway project is that this State-mandated condition of a parallel 'free route' severely limits the potential range of reasonable and feasible alternatives under NEPA. FHWA, as the Lead Federal Agency (LFA) under NEPA, might have also considered a comparison of a toll facility with a 'freeway' and the resultant environmental impacts between the two. Potential improvements to the existing corridor were studied and are further discussed in the next section of this attachment. However, the DEIS's narrowly defined purpose and need essentially presents the decision-makers and the public with either a new location, multi-lane, toll facility or 'no action'. EPA does not believe that this DEIS represents the full range of alternatives required under NEPA.

The difference in design for a typical section (No. 1) of a toll road with 'free' 3-lane service roads on either side of the improved existing 6-lane facility and a new location 4-lane toll road (Typical section No. 2) is depicted in Figure 2-11. There is also a footnote for typical section No.1 that areas with turn lanes or near access points will require three lanes on the service lanes and that other areas will have only two lanes on either side of the 6-lane new toll road. EPA does not believe this to be an equitable design evaluation and that 4 paved lanes on new location can be compared to potentially 12 paved lanes for an improved US 74. Improving the existing 'G Corridor' to accommodate 6 paved lanes of new toll facility with potentially another 6 lanes as parallel service roads does not compare reasonably to a new location, 4-lane toll road. EPA has similar concerns regarding the analysis and further consideration for 'Revised PSA G'.

EPA continues to be concerned regarding the lack of integration of comprehensive transportation planning with local land use planning, and the severe 'deterioration' of the US 74 corridor within the project study area. There is no documentation in the DEIS concerning interim Transportation System Management (TSM) physical or operational improvements, such as intersection realignments, turn lanes, access control, grade separations, etc., that have been fully considered or implemented for the existing multi-lane facility.

#### Alternatives Considered

The DEIS outlined several alternatives and describes a three-step screening process used to develop and evaluate a range of alternatives that fully meet the primary purposes and needs. EPA staff was generally involved in coordination and discussions during NCTA's screening process for alternatives. From an analytical perspective, EPA

did not disagree with the general approach of narrowing down preliminary study corridors and the qualitative first and second screening methodology. However, EPA continues to have environmental concerns using a 'quantitative' third screening of preliminary study alternatives using the initial 1,000-foot wide study corridors and then GIS-level data for 'conceptual right of way'. Table 2-3 includes the quantitative GIS Analysis Screening Criteria used to screen Preliminary Study Alternatives (PSAs). There were 20 different criteria identified, the impact estimate method, and the data source. There is too much variability in the GIS data sources within a 1,000-foot corridor and a 'conceptual right of way' to make this screening method reliable and totally realistic. For example, intermittent and perennial streams included the 'number of linear feet within the 'conceptual right-of-way'. The existing data sources are potentially too inaccurate to allow for full and meaningful comparisons between the numerous segments and their estimated impacts.

Table 2-4 of the DEIS includes the quantitative screening of the preliminary study alternatives, including those eliminated from further study. For example using residential and business relocations as an example, Table 2-4 portrays 79 potential residential relocations and 110 business relocations for Alternative D. However, in Table S-2, Summary of Environmental Impacts, residential relocations are shown as 107, and business relocations as 48 for DSA D. This indicates that even for relatively fixed data and updated GIS informational sources, the quantitative screening criteria were inaccurate by more than 35% (increase) for residential relocations and 129% (decrease) for business relocations.

Another example of the inaccuracy of this screening method includes DSA D for potential stream impacts. Table S-2 includes total stream impacts of 21,709 linear feet with 11,915 linear feet for intermittent and 9,794 linear feet for perennial. Again, using the conceptual right-of-way 'quantitative' information in Table 2-4 for Alternative D, intermittent stream impacts were estimated at 36,771 linear feet and 3,281 linear feet for perennial streams for a total of 40,052 linear feet. EPA does not believe that this 'third step' of the screening methodology is statistically valid. EPA staff and other agencies made preliminary technical comments during 'TEAC meetings' and scoping to this general concern. The assumption was being made by NCTA and FHWA that ultimately all of the segments for the different preliminary study alternatives would be 'equally inaccurate' for the different impact criteria for each alternative. In reviewing the different Detailed Study Alternatives impacts under Table S-2 with Preliminary Study Alternatives in Table 2-4, EPA could not find a consistence statistical correlation other than impacts 'generally' decreased for stream and wetland impacts from the preliminary study alternatives to the DSAs (prior to 'bridging decisions' for major hydrologic crossings). However, in evaluating the stream data between the two tables, intermittent stream impacts were generally over-estimated and perennial stream impacts generally underestimated (by an order of magnitude). For other resources quantified in the tables, impacts decreased or increased to varying percentages or remained the same. One general trend was identified for relocations: Residential relocations almost all increased from the preliminary study alternatives to the DSA stage and business relocations almost

all decreased. EPA cannot find a description in the DEIS as to why there is this significant trend difference between the two types of relocations.

Under the Summary section S.7 of the DEIS, the recommended alternative is identified as DSA D. This alignment comprises segments 2, 21, 30, 31, 36, 36A and 40. There were 16 DSA carried forward in the DEIS with corridors A, B, C and D being the primary new routes with various segments and crossover options between corridors. Preliminary study alternatives are further identified by segments and depicted in Figures 2-6a through 2-6d. DSA functional designs are depicted in Figures 2-10a through 2-10cc. There are only slight variations between Alternatives A, B, C and D. Impacts to streams and wetlands do not vary that significantly between these 4 DSAs. The A1, B1, C1, D1, A2, B2, C2, D2, A3, B3, C3, and D3 alternatives represent relatively minor new location segment changes. Total stream impacts for the 16 DSAs range between 21,709 and 24,818 linear feet.

Section 2.4.4.1 of the DEIS states that it would be difficult for Union County to recover economically from the magnitude of business impacts resulting from preliminary study alternatives G, E, F, E1, F1, E2, F2, E3 and F3. This statement is made based upon direct relocations to businesses that were estimated to range from 207 to 499. However, as previously addressed, these preliminary study estimates were found to be extremely inaccurate for other DSAs, including A, B, C, D, etc. (i.e., 'A magnitude difference'). Corridors E and F both tied back in west of Monroe and combined new location with improving the existing facility. EPA environmentally preferred these alternatives when the Monroe Connector project was being advanced by the North Carolina Department of Transportation (NCDOT) and FHWA. These preliminary study corridors represented a better potential balance between the human and natural environmental impacts and greatly minimized indirect and cumulative effects in the north and western portions of the project study area. EPA believes that with the inaccuracies of the third-step screening process utilized, missed opportunities for detailed study of Alternatives E and F are very probable. NCTA has stated in previous TEAC meetings that Alternatives E and F do not meet purpose and need (i.e., 'They cannot be tolled because there is no parallel free route for the western portions of the project where the existing US 74 facility would need to be improved'). There is no socio-economic discussion concerning the indirect impacts to businesses along US 74 after a new location facility is built. Numerous businesses rely on current traffic for their continued existence.

Page P-4 of the DEIS quotes the Federal Register notice of January 30, 2006, that rescinded the DEIS for the Monroe Connector. The notice states: "*The new Draft EIS will include a toll alternative among the full range of alternatives that will be analyzed as well as a change in the location of the eastern terminus*". Due to the narrow purpose and need as previously discussed, NCTA and FHWA did not provide detailed study alternatives for anything but a new location toll facility and did not objectively analyze a full range of alternatives, including the combinations of TSM measures, Transportation Demand Management (TDM) alternatives, and Mass Transit/Multi-modal Alternatives. Decisions to eliminate these individually identified options and alternatives were eliminated from further study because they were determined not to meet purpose and

need (Pages 2-6 and 2-8). Additional consideration was given to Preliminary Study Alternatives (PSA) G and Revised G alternatives, but the analysis on Pages 2-27 to 2-33 was provided so as to basically appease agencies that questioned the elimination of this improve existing alternative early in the planning process and prior to the issuance of a DEIS. In the conclusion statement to this section, it is reaffirmed by the transportation agencies that improving US 74 as a controlled-access multi-lane toll facility with multi-lane frontage roads on either side is not a reasonable or practicable alternative.

The Year 2035 Traffic Projections for the DSA segments are presented in several sections of the DEIS, including Table E-1, Table 2-7, etc. The estimated travel volumes for the Monroe Connector/Bypass are forecasted to be relatively low between Forest Hills School Road (16,400 AADT) and Rocky River Road (46,600 AADT). A 4-lane new location facility would appear to adequately handle these projected volumes into the design year. This information would indicate that the '12-lane' design requirements for PSA G and PSA Revised G may be over-estimated and that a 70-foot median for additional interior lane capacity would not be required for the new toll facility for at least half of the 20-mile project length. EPA recognizes the increased traffic projections for the western portion of the project study area segments (West of US 601 to I-485) and that Year 2035 projections are higher (i.e., 52,300 AADT to 95,600 AADT). There is no detailed discussion concerning different design considerations given to the specific projected traffic volume segments.

#### Wetland and Stream Impacts

EPA acknowledges that the FHWA and NCTA's recommended alternative (preferred) is DSA D and that it has lower wetland and stream impacts than many of the other alternative considered. However, the DEIS does not fully address EPA's comments from the February 14, 2007, scoping letter (Pages 1 and 2) concerning the need to fully consider and address the number and associated impacts for free-flowing interchanges and toll collection facilities. EPA requested that full consideration be given to using single point urban interchanges (SPUI) and compressed cloverleaf designs at grade separated locations. EPA was not requesting a specific minimization design at the western termini tie-in with the proposed Interstate 85 connection ("freeway to freeway"). Specifically, the design of the interchange loops and ramps at Morgan Mill Road (Figures 2-10r and 2-10s) and Austin Chaney Road (Figures 2-10v and 2-10w) are examples where additional design options should be evaluated for minimization purposes. The DEIS states that at least two interchange designs were considered for each location. However, there is no specific reference to single-point urban interchanges (SPUIs) or compressed clover-leaves being considered. Furthermore, Section 6.4.5.2 does not reference alternative design considerations for interchanges as an avoidance and minimization measure for streams and wetlands under Section 404(b)(1) of the Clean Water Act. The DEIS does not provide details as to how and to what degree the DSAs incorporate measures to avoid and minimize impacts to jurisdictional waters. EPA does recognize the bridge location field review meeting avoidance and minimization efforts conducted on October 7 and 21, 2008. However, direct impacts to existing 303(d) listed impaired streams and other waters at risk from further degradation have not been fully



addressed from the standpoint of avoidance and minimization (e.g., Proposed median width of 70 feet, 300-foot minimum right of way, 12-foot paved outside shoulders, etc.).

Portions of North Fork Crooked Creek, South Fork Crooked Creek and Richardson Creek within the project study area are on the 2008 Draft 303(d) list of impaired waters. Additional stream segments and waters of the U.S. within the Future Land Use Study Area (FLUSA) are also on the 303(d) list as cited in Section 7.4.1 of the DEIS (i.e., Richardson Creek, Lanes Creek and Stewarts Creek). These waters are primarily impaired due to urban runoff, agricultural and construction activities. NCTA's proposed road construction is a type of activity that has been shown to be contributing to the impairment of these receiving waters. It is also probable that the proposed facility will contribute both in the short-term and long-term to the continued degradation of these waters of the U.S., and prevent them from being restored as required by the Clean Water Act. Local ordinances, riparian buffer rules and implementation of past stormwater control initiatives have not proven to be successful in addressing these continued development conditions. Moreover, the recommended alternative will directly impact approximately 7.7 acres of jurisdictional wetlands and 21,966 linear feet (4.2 miles) of total streams with 14,052 linear feet (2.7 miles) estimated to require compensatory mitigation. However, this assumption regarding compensatory mitigation may be misunderstood by NCTA and FHWA, because the Corps and NCDWQ may require mitigation for all intermittent streams as well (the total 21,966 linear feet). EPA recommends that NCTA propose compensatory mitigation for all impacts to jurisdictional resources.

The DEIS does not address EPA's February 14, 2007, scoping comments letter recommending that NCTA and FHWA provide a conceptual plan in the EIS that includes potential opportunities for on-site mitigation. Mitigation and compensatory mitigation for jurisdictional impacts is very generally discussed in Sections 6.4.5.1 and 6.4.5.3. It does not provide the regulatory and resources agencies any specific proposals or plans for providing compensatory mitigation. EPA identified potential mitigation concerns in its February 14, 2007, scoping letter. The project is partly located in the Catawba hydrologic unit code (HUC) 03050103, a difficult watershed in which to find suitable mitigation sites. This environmental issue was not addressed in Section 6 of the DEIS. There are numerous other TIP projects being planned in this watershed as well. The preferred alternative has approximately 7.7 acres of jurisdictional wetland impacts and 21,966 linear feet of total stream impact with 14,052 linear feet estimated to require mitigation. There is no detail provided in the DEIS if there is adequate on-site (or off-site) mitigation available in the HUC. The DEIS provides a cursory discussion of the Memorandum of Agreement (MOA) between the NCDOT and the Ecosystem Enhancement Program (EEP). It is not clear from this section of the DEIS that the NCTA is subject to the NCDOT/EEP MOA or if the NCTA will pay into the traditional in-lieu fee program run by EEP under a Memorandum of Understanding (MOU) with the North Carolina Department of Natural Resources (NCDENR) and the U.S. Army Corps of Engineers (USACE). Considering the length of time that this proposed project has been in planning (more than 10 years under FHWA), EPA believes that this basic issue of mitigation should have been conceptually developed at the DEIS stage. Under the MOU

program, EEP may not have any mitigation planned until after NCTA provides payment and that this is typically after the Section 404 permit has been issued. EPA requests that the type of proposed mitigation should be addressed prior to the issuance of the Final EIS.

EPA believes that 'typical' sedimentation, erosion and stormwater management controls and Best Management Practices (BMPs) in the Piedmont have not shown to be very effective based upon NCDOT studies commissioned with the North Carolina State University's Department of Biological and Agricultural Engineering (i.e., Dr. Daniel E. Line). Erosion rates from one NCDOT Piedmont project using BMPs still showed off-site erosion rates to receiving waters during construction of 18.5 tons per year over three years. NCTA and FHWA should commit to providing the 'most aggressive' methods of sediment and erosion control and stormwater treatment to remove pollutants and sediment both during construction and afterwards. NCTA and FHWA should make environmental commitments to provide methods such as wet ponds, created stormwater wetlands, infiltration trenches and wells, sand filters, temporary and permanent retention ponds, level spreaders, retaining walls to reduce fill impacts from steep slopes, and reinforced grassed-swales, at a minimum. During construction, NCTA and FHWA need to restrict clearing and grubbing to the maximum extent possible. More effective erosion and turbidity control measures researched by NCDOT and NCSU including Polyacrylamide (PAM), coconut fiber logs, and absorbent wattles need to be incorporated into the soil and erosion plan and included as an environmental commitment (Note: these more costly measures have been shown to drastically reduce turbidity and sedimentation during construction). Permanent stormwater measures (including detention basins/hazardous spill catch basins) need to be planned and designed within the proposed facility's right of way to address future development runoff and 'hydrologic trespass' from off-site sources such as residential and commercial developments, toll collection facilities, parking lots, etc. Considering the high percentage of potential truck traffic on existing US 74, NCTA and FHWA should consider the use of hazardous spill catch basins/stormwater basins at key locations, including 303(d) listed streams that are already impaired from urban runoff and pollutants.

In Section 6 of the DEIS, soil limitations for roadway construction are generally discussed, including the assessment that the soils in the area underlain by the DSAs are rated moderate or severe for road construction. From Page 6-3 of the DEIS, the expected soil limitations can be overcome through proper engineering design, including the incorporation techniques such as soil modification, appropriate choice of fill material and design of drainage structures capable of conveying estimated peak flows. Decisions regarding soil limitations and methods to overcome them are deferred to the final design stage. EPA has environmental concerns if there is a need for significant amounts of off-site fill from borrow sites and the potential impacts to wetlands and streams from borrow pit operations. Based upon past transportation projects in the Piedmont and in the Charlotte area, the DEIS should have identified and estimated potential borrow site and fill needs. Prior to the issuance of a FEIS, FHWA and NCTA need to explore this issue further and provide an estimate of impacts to jurisdictional streams and wetlands and other natural resources resulting from borrow pits.

EPA as well as other agencies previously requested that FHWA and NCTA explore methods to directly address mitigation for indirect and cumulative effects of the proposed project, including long-term impacts to water quality. FHWA and NCTA are not proposing any mitigation for indirect and cumulative impacts to water quality. According to the Summary of Potential Indirect Impacts by Zone, Table 7-1, Zone 3 and 5 are expected to have 'Moderate' and 'High' potential for accelerated growth as a result of the project. Furthermore, this table also cites that the potential effects on sensitive resources as a result of the accelerated growth are also 'Moderate' for both Zones 3 and 5. Table 7-2 of the DEIS includes the assessment that within Zones 2, 3, and 5, induced growth resulting from the project would contribute to increased impervious area, non-point source runoff and reduction of riparian buffers. There is also a statement that even under the 'No-Build', continued degradation of water quality is expected due to ongoing development. EPA does not believe that the long-term water quality impacts in these zones will be improved by local entities and development interests in the near future. Newly enacted rules and local ordinances in the project study area are essentially untried and untested. By NCTA and FHWA's indirect and cumulative effects assessment, the proposed project will most likely lead to further degradation to water resources in several areas from accelerating development near planned interchanges and along intersecting roadways (Page 7-16).

EPA has numerous questions and environmental concerns regarding the potential indirect and cumulative effects of the proposed project on waters of the U.S. These issues are more specifically addressed the ICE section of this attachment.

EPA notes that the DEIS identifies the preparation of a conceptual mitigation plan for unavoidable wetland and stream impacts as an 'unresolved issue and area of controversy' (Page S-18). The lack of a conceptual mitigation plan for impacts to jurisdictional waters of the U.S. is a significant deficiency in this DEIS.

EPA also notes that the selection of the Least Environmentally Damaging Practicable Alternative ("LEDPA") is also an unresolved issue and area of controversy (Page S-18). The Monroe Bypass/Connector project is not in the Merger 01 process. The selection of the LEDPA is a U.S. Army Corps of Engineers (USACE) determination under Section 404 and is generally made at the final permitting stage for the project.

In Section 6.4.3 and Appendix J, the FEIS should include the North Carolina Wetland Assessment Method (NCWAM) wetland type of each site, determined by the dichotomous key (pursuant to the June 3, 2008 Wilmington District Public Notice). To assist in the determination of NCWAM wetland type without additional fieldwork, Appendix B of the NCWAM User Manual has a cross-reference of wetland types based on NCWAM, North Carolina Natural Heritage Program, and Hydro-geomorphic classes and sub-classes. Also, NCTA and FHWA should be prepared to complete a NCWAM assessment on all wetland impact sites for the USACE's LEDPA selection. EPA does not believe that the current DWQ Wetlands Rating provides meaningful information for wetlands permitting decisions.

## Air Quality Impacts

EPA notes the special project commitment (“Green Sheet”) regarding air quality and that NCTA will coordinate with MUMPO to ensure air quality conformity determination for the region includes the project’s design concept and scope consistent with the ‘preferred alternative’. The DEIS states that the next update to the MUMPO LRTP and conformity determination will need to designate the Monroe Bypass portion of the project as a toll facility prior to the completion of the ROD. Page 4-18 of the DEIS notes that the only inconsistency in the current LRTP is that the Monroe Bypass portion of the project is shown as a non-toll facility. EPA believes this inconsistency to be potentially significant.

EPA believes that vehicle miles traveled (VMT’s) will substantially increase from the proposed action, particularly in the Union County area. EPA further concurs with NCTA and FHWA that the proposed action will significantly induce {“accelerate”} development, particularly in Zones 3 and 5 of the FLUSA. Increased development further from Charlotte and other more urbanized areas will invariably increase vehicle commutation distances and result in increased air pollution emissions. Any congestion management relief along US 74 will be potentially offset by increased ‘development sprawl’, greater VMT’s in the project study area and, ultimately, increased air pollution emissions. There are no identified regional plans within the project study area (and specifically in areas covered by Zones 3 and 5) to improve mass transit, public transportation, etc. Table E-2 of the DEIS includes VMTs under various scenarios, including Union County and the entire Metrolina Region. Comparing DSA D to the No-build Alternative, the Union County area is expected to have a slight increase in 2035 VMTs, from 11.481 million to 11.503 million based upon FHWA and NCTA’s future projections. FHWA and NCTA are predicting only slight increases in Annual Average Daily Traffic (AADT) within the project segment (Table E-1), with the exception of the project segment from I-485 to Stallings Road. For DSA D, AADTs are expected to increase from 41,400 to 95,600 in 2035 for this segment. These traffic projections appear to be in direct conflict with the current facility design. The NCTA and FHWA are designing a 4-lane new location facility with a 70-foot median. The reason provided in the DEIS for this ‘increased’ median width is future capacity and the ability to add interior lanes (i.e., Approximately 6 future travel lanes for a maximum total of 10). That rationale was also applied to the further consideration and evaluation given for the PSA G and PSA Revised G Alternatives (12 total lanes). The DEIS also states: *“There is a high potential for new residential growth east of Monroe, where the DSAs would improve access and allow for easier and faster commutes to the Charlotte-Mecklenburg County urban area”*. These commutes would also be longer. This predicted condition following the construction of a 20-mile new location toll road appears to be in direct conflict with some of the DEIS traffic projections. Per Table 1-3, 82.3% of Union County ‘drive alone’ to commute to work (compared to 77.2% for Mecklenburg County).

Please refer to Appendix A-6 of the DEIS, that includes EPA’s letter’s of November 17, 2008, and January 9, 2009, on the State Implementation Plan (SIP). EPA

issued a Final Rule in the Federal Register on May 8, 2009, for the 'Finding of Failure to Submit State Implementation Plans Required for the 1997 8-Hour Ozone National Ambient Air Quality Standard: North Carolina and South Carolina.

The DEIS states that the Charlotte-Gastonia-Rock Hill air quality region was designated as a moderate non-attainment on June 15, 2004, for the 1997 8-hour ozone standard. Based upon recent monitoring data, 2007 and 2008 8-hour ozone concentrations averaged approximately 84 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). In order to retain the moderate non-attainment status and not be reclassified by EPA as 'serious non-attainment', 2009 monitoring data for the 8-hour ozone standard would have to be 65  $\mu\text{g}/\text{m}^3$ . While still early in the '2009 ozone season', the North Carolina Division of Air Quality (NCDAQ) has already issued several Code Orange ozone alerts for the Charlotte and Piedmont areas as of June 4, 2009. From a CAA perspective, a 'maintenance area for attainment' means that the urban area has exceeded NAAQS levels for one or more pollutants in the past. The 1997 8-hour average ozone standard and the 2008 8-hour average ozone standard are 0.08 and 0.075 parts per million, respectively.

The DEIS outlines substantial information on transportation conformity, determinations for LRTPs and TIPs, potential for conformity lapse grace period, potential for a conformity lapse, implications for the Monroe Connector/Bypass project, status of the SIP for the 'Metrolina' Region, and project-level conformity. EPA concurs with most of the information and analysis in this section of the DEIS. The next update for the MUMPO LRTP must be approved by May 3, 2009. MUMPO is currently conducting travel demand modeling and air quality analyses to demonstrate conformity. MUMPO is currently exploring a range of options for demonstrating conformity for the LRTP, including the adjustment of the mix of new projects included in the LRTP and alternative modeling methods to demonstrate conformity.

Referring to EPA's previous letters on the SIP and transportation conformity, EPA believes that it is highly improbable that the Charlotte area will be able to retain its moderate non-attainment status for the 8-hour ozone that is required by June 15, 2010. One of the primary reasons for the 'Environmental Objections' rating for the preferred DSA D alternative is where an action might violate or be inconsistent with achievement or maintenance of a national environmental standard. Under EPA's policy and procedures under Section 309 of the CAA and NEPA, the threshold for rating the environmental impact of the proposed action is based not only on the potential or likelihood to violate a national environmental standard, but also on the proposed mitigation for the project and if that mitigation is adequate to address the potential and significant environmental impacts. NCTA and FHWA did not propose any air quality related mitigation to address the potential direct impact from this 20-mile, new location toll facility or its indirect and cumulative effects. Until the issues involving the SIP, LRTP update, TIP and conformity demonstration are fully resolved, EPA believes that this new location project will continue the pattern of development sprawl in the Charlotte/Metrolina area and further result in air quality degradation and future potential violations of the CAA's 8-hour ozone standard. EPA concurs with NCTA and FHWA that this new location facility will most likely induce development portions of the project

study area. EPA does not concur with NCTA and FHWA that this induced development will not ultimately increase VMTs as a result of the construction of the new location facility. This environmental objection rating includes other new location alternatives (DSAs) as well.

#### Mobile Source Air Toxics (MSATs)

EPA has reviewed the Mobile Source Air Toxics (MSATs) sections contained at 4.2.3, 4.2.5.2 and Appendix E. EPA acknowledges that a more detailed qualitative analysis was provided in the DEIS. However, EPA's February 14, 2007, scoping letter requested that FHWA and NCTA consider the development of an emissions inventory, obtaining 'near-roadside' baseline monitoring data, and an evaluation of the potential health impacts for the different DSAs. This requested information was not provided in the DEIS and FHWA continues to cite its 2006 Memorandum – Interim Guidance on Air Toxic Analysis in NEPA Documents. EPA does not fully agree with the criteria used by FHWA to determine if a quantitative analysis is required for MSATs (Page E-6 of the Appendix E). EPA has included a Technical Review Memorandum from the EPA Region 4 Air Toxics Assessment and Implementation Section as Attachment B for further consideration by the transportation agencies (Please see attachment).

The DEIS should include a discussion of those measures that will be used to mitigate the emission of air toxics associated with the construction of the project and with its operation. During construction and for the final project design, every effort should be made to avoid air quality impacts including, for example:

1. A ban on open burning -- all materials that would normally be burned should be recycled to the extent feasible to avoid health and visibility impacts.
2. Minimizing dust and debris generated during construction.
3. Construction limited to the smallest footprint feasible to avoid environmental degradation and reduce the amount of dust generated during construction.
4. Maintenance of the maximum amount of trees feasible within the project right-of-way during construction to reduce footprint, noise and dust dispersion during construction.
5. Installation of the latest air pollution control devices on all construction equipment (see EPA's Verified Technologies List for diesel engines at <http://www.epa.gov/otaq/retrofit/verif-list.htm>).
6. Use of ultra low sulfur fuel exclusively for construction equipment.
7. Restriction on the time that engines involved in construction may be left to idle.
8. Keeping the final alignments furthest from the potential sensitive receptors with the maximum of vegetative buffers.

EPA has provided past comments to FHWA on the 'qualitative assumptions' it uses under its Interim Guidance (e.g., Triangle Parkway). Again, the qualitative analysis provided in the DEIS uses regional (Union County, Entire Metrolina Region) air modeling and traffic volumes/VMTs, etc., to estimate baseline and future MSAT emissions. With the exception of the next to the last paragraph on Page E-8, the

discussion on Pages E-7 and E-8 concerning MSATs is subjective and not supported by actual quantitative, project-specific analysis (“*Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures*”). The DEIS does not identify any ‘local control measures’ for MSATs in the project study area. FHWA has asserted that MSATs cannot be accurately modeled and the health effects accurately predicted. EPA requests that FHWA provide the identification of ‘local control measures’ and how these measures could be assessed against ‘uncertain health effects’.

The DEIS does identify 3 public schools (Referring to Figure 3-3a) located near the boundaries of the DSA corridors and no other potential sensitive receptors. Of these 3 schools, 1 is potentially located ‘downwind’ (prevailing winds) from the new facility, Stallings Elementary School. This school is expected to be within the anticipated range of near-roadside effect from future MSAT emissions. FHWA and NCTA should fully consider and explore the environmental commitment to perform future air monitoring between the new facility and the school. Considering the high percentage of anticipated truck traffic and some of the highest anticipated AADTs on the new facility and that this is potentially a ‘new emission source’, a finite period monitoring program would not be inconsistent with other past FHWA actions regarding MSATs. Furthermore, direct data collection by FHWA would potentially address some of the ‘uncertainty’ that it has expressed in the modeling and baseline estimates for MSATs. There are numerous more recent, peer-reviewed and published health studies and the correlation with near roadway exposures to MSATs that have not been considered or cited in the DEIS. EPA also understands that a new elementary school has been recently built in the project study area and near the DSAs and that this school has not been identified in the DEIS.

### Noise

The DEIS contains detailed information regarding potential noise receptor impacts. For DSA D, there are an estimated 150 total # of impacted receptors using FHWA Noise Abatement Criteria. FHWA and NCTA are proposing 3 noise barriers that are 6,458 linear feet in total length that benefit approximately 51 impacted receptors. Under Table S-2, EPA is unfamiliar with the term in the impact column as the “ICE Overall Ambient Noise Increase”. This phrase or condition needs to be further explained in future NEPA documents in the context of FHWA noise abatement criteria. The footnote in the table describes that: ‘impacts are not expected to vary substantially by DSA’.

### Prime Farmlands and Agricultural Lands

Section 4.3.2 of the DEIS describes Prime and Important Farmland Soils. Census data for farmland losses from the June 2004 report for Union County is not believed to be current or reflect more recent development trends. Union County has been one of the fastest growing counties in North Carolina. North Carolina lost more than 600,000 acres of farmland from 2002-2007 according to a recent census by the U.S. Census of Agriculture. Also in this period, North Carolina lost approximately 1,000 individual

farms. A more recent U.S. Department of Agriculture report in 2007 showed that North Carolina lost 1,000 farms in 2006 alone, making it the state with the biggest loss of farms in the U.S. These trends are expected to continue as North Carolina continues to promote roadway infrastructure, development and urbanization further from metropolitan center districts. Past State and Federal initiatives in North Carolina appear to be having little effect on these alarming trends.

NCTA and FHWA's preferred alternative DSA D has 499 acres (i.e., more than  $\frac{3}{4}$  of a square mile) of impact to agricultural land. DSA D will require the 'relocation' of 3 active farms. Farmland impacts are further discussed in Section 4.3.3 of the DEIS. None of the farmland conversion impact ratings from Appendix F and Table 4-11 scored greater than 100 for Part V or 260 points for Parts V and VI on the NRCS-CPA-106 forms. The statement under Farm Relocations concerning 'suitable replacement property available for farm relocation' is not substantiated by actual data or a specific socio-economic analysis. Considering that agriculture and supporting businesses and employment has historically been one of the largest sectors in the regional economy and Union County, the proposed project will further accelerate these potential losses (See discussion concerning indirect and cumulative effects). There are no avoidance and minimization measures (e.g., Reduced right-of-way from the 'minimum' 300 feet) suggested in the DEIS for potential direct impacts to active farmlands.

#### Other Human and Natural Environment Direct Impacts

The DEIS identifies other human and natural environment impacts for the DSA D preferred alternative as well as other DSAs in Table S-2, including 107 residential relocations, 48 business relocations, 9 neighborhoods impacted, 3 churches impacted, 11 hazardous material sites, 11 floodplain crossings, 3 historic resources with No Adverse Effects, 450 acres of terrestrial forests, and 8 acres of open water (ponds). Potential impacts to archeological sites are considered to be 'low', but final surveys have not been conducted. There are also unresolved Endangered Species Act Section 7 issues for the Carolina heelsplitter (*Lasmigona decorata*) and there are several State threatened or endangered aquatic species that could be impacted by the project in the Goose Creek watershed. EPA defers to the U.S. Fish and Wildlife Service (FWS) and N.C. Wildlife Resources Commission (WRC) regarding these potential impacts and issues. Due to the rural nature of a substantial portion of the project study area and the significant impacts to terrestrial forests, the DEIS also identified wildlife habitat fragmentation as an 'indirect affect'. EPA believes that there is also a potential direct impact and potential safety issue from bisecting forests and fields with multi-lane, high-speed facilities in rural areas. EPA recommends that further consultation with FWS and WRC is needed to identify wildlife crossings and other minimization considerations involving large mammals such as deer, and a new multi-lane facility.

NCTA and FHWA estimate the probable range of total project costs at \$716.3 to \$850.0 million with a median total project cost of \$777.4 million for DSA D.



## Indirect and Cumulative Effects

In general, the Indirect and Cumulative Effects Section (Section 7) is not specific, and provides no quantitative data to characterize the existing conditions in the project area (such as percent land use by commercial, agriculture, etc.). There is no quantitative data concerning potential impacts to wetlands, streams, water quality, and habitat. Section 7 of the DEIS only provides qualitative statements, and in some cases, subjective opinions. The DEIS assumes that growth will continue regardless of the new location facility, and that the existing local and state requirements will minimize impacts, but there is no data to support the statements made. The discussion in the DEIS provides very little assistance in determining how much impact is likely to occur, particularly in Zones 3 and 5, where moderate to high impacts are predicted.

The FEIS should include more quantitative data on existing conditions and potential impacts to wetlands, streams, water quality, and habitat from the No Build Alternative and the Preferred Alternative. For example, existing land use may be estimated using the NWI data or other GIS wetland data and the USGS's North Carolina GAP Analysis Project's land use coverage map. There are also many useful GIS data layers at NC One Map. The FEIS should calculate the acreage of induced growth from the Preferred Alternative, using the No Build as a baseline. The FEIS should also calculate the cumulative amount of potential impervious surfaces added and cumulative increases in percent impervious surface for each watershed from the proposed project and other reasonably foreseeable activities. For instance, the FEIS developed for the I-73 project (TIP I-4923) utilized NRCS's *Urban Hydrology for Small Watershed Basins: 1975* to determine the percent of impervious surfaces for land use type. This FEIS then multiplied the predicted acreage of a type of development (residential, commercial, etc.) by the corresponding percentage (e.g. 85% for commercial development, 72% for industrial development, etc.). Likewise, land use models and available GIS information on wetlands and streams in the project area could be used to develop predictions of indirect and cumulative impacts to wetlands and streams in the watershed.

At a minimum, the FEIS should list known areas of impacts (recent and future TIP projects with projected impacts and other permitted or planned activities) along with the estimated amounts and a total estimated impact for each watershed. Further, the water quality impacts could be estimated using the FHWA's "Constituents of Highway Runoff" to estimate the amount of pollutant that would enter streams after a twenty-day buildup period, assuming there were no structures such as retention basins or ditches to filter sediment. It is understood that storm water requirements must be met, and that avoidance and minimization efforts may reduce the amount of estimated wetland and stream impacts. It is also understood that the quantitative information is an estimate, and may provide a worst-case scenario. However, the FEIS should provide as much quantitative information as possible. EPA is formally requesting a 'quantitative' indirect and cumulative impact assessment for the preferred DSA D alignment for all 5 zones (not solely Zones 3 and 5).

Also in Table 7-2 under Federally-protected species, EPA does not understand the following statement: “*Indirect impacts can result in modification of existing habitat or creation of new habitat for threatened and endangered species*”. This general claim of ‘habitat creation’ may only be valid for certain plant species that may prefer open areas along power line easements, rights of way, etc. Please consult with the FWS regarding the indirect impacts to threatened and endangered species.

ICE References:

FHWA, 1981. FHWA/RD-81/042: Constituents of Highway Runoff.  
Washington D.C., 1981

USDA-NRCS Soil Conservation Service Engineering Division. Urban  
Hydrology for Small Watershed Basins, Technical Release No. 55. January 1,  
1975.

USFWS, National Wetland Inventory , Wetlands Digital Data.

USGS, North Carolina GAP Analysis Project, Land Use Coverage Map.

DEIS Format.

For ease of review and improved consistency we recommend that the standard EIS format per the CEQ regulations at 40CFR Section 1502.10 be used for the Final EIS. CEQ recommends that this format be utilized unless there is a compelling reason to do otherwise.

**Attachment B**  
**Monroe Connector/Bypass DEIS**  
**June of 2009**

**Comments by the Air Toxics Assessment and Implementation Section**

Section 4.2.3 and Appendix E address Mobile Source Air Toxics, indicating that technical tools available to the Federal Highway Administration do not enable the agency to predict the project-specific health impacts of the emission changes associated with the alternatives in the DEIS. The DEIS further states that due to these limitations, the document includes a discussion regarding incomplete or unavailable information in accordance with CEQ regulations (40 CFR 1502.22(b)).

The assertion of the FHWA in NEPA documents that available tools and information are not adequate for use in NEPA analyses has been a point of disagreement between FHWA and EPA for some time. In an effort to avoid giving the appearance of tacitly agreeing with the FHWA, EPA offers additional responses to a few of their assertions herein. It should be understood that EPA believes that alternatives being considered under the NEPA process can and should be properly compared using their potential impacts associated with Mobile Source Air Toxics as one of the measures for comparison.

**Page E-1, Section E.1**

This section discusses the reductions in air toxics emissions that will result from the regulations the EPA has issued concerning vehicle emissions and fuel formulation. It is important to note that these are projected reductions, and they do not absolve the sponsor and FHWA from the responsibility to protect public health from emissions associated with this project by using appropriate mitigation measures. This information does not inform the decision-makers between options since the DEIS's purpose is to compare the impacts of those options at some point in the future, not to evaluate the impact of the EPA regulations between today and some point in the future.

**Page E-2 Section E.2**

The section on Unavailable Information for Project Specific MSAT Impact Analysis states that there are technical shortcomings that prevent reliable estimates of MSAT related project-specific health impacts. While it is correct that these tools do not predict health impacts, they do allow a comparison of potential impacts among alternatives. The thrust of the text is at variance with the common practice of air quality and environmental health professionals, as reflected in the body of peer-reviewed literature employing these various models.

In particular, the NCHRP report referenced below (now final) represents the views of air quality modeling and risk assessment experts, and reaches conclusions vastly divergent from those in this and the following pages.<sup>1</sup>

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<sup>1</sup> Carr, E.L.; Ernst, D.A.; Rosenbaum, A.; Glass, G.; Hartley, S. (2007) Analyzing, documenting, and communicating the impacts of mobile source air toxic emissions in the NEPA process. Report under NCHRP project 25-25. Note that the authors from ICF International have developed air quality models

### Page E-3 Emissions

The “Emissions” section says that MOBILE6.2 has limited applicability at the project level,

“... is a trip-based model—emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects.”

This description of MOBILE6.2 is incorrect. According to EPA’s “Technical Guidance on the Use of MOBILE6.2 for Emission Inventory Preparation,” *“MOBILE6.2 has an ‘AVERAGE SPEED’ command which is intended specifically to assist users in modeling individual roadway links.”*

This statement also contradicts the opinion of emission modeling experts (Bai et al., 2007, Atmos Environ): *“Note that a consistent link level interface [with activity from travel models] can be attained if trip-based emission factors are converted to link based specifications. The latest MOBILE model (MOBILE6.2) reflects such a conversion for its previous versions, which now specifies emission factors for different facility types”*<sup>2</sup>

The text misconstrues the need for emissions “at a specific location at a specific time.” Numerous scientific articles have used emission factor models like MOBILE6.2 to predict air pollutant concentrations at receptors with high spatial resolution, resulting from vehicle activity on specific road links without the need for emission factors at the resolution described in the policy text (i.e. modal emission rates).

The section continues, “Also the emission rates used in MOBILE6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles.” While the data obtained on the fractions of total organic gas (TOG) comprised by individual toxics were collected in the early 1990s, there is no *a priori* basis for asserting that these toxic fractions are not applicable to current vehicles. MOBILE6.2’s emission factors for VOCs, CO, and NOx are based upon extensive testing of recent model year vehicles.

One study from Connecticut that evaluated the performance of the toxic ratios within MOBILE6.2 using ambient data concluded that modeled and monitored data “were in good agreement.”<sup>3</sup>

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employed by EPA, and include past presidents of professional environmental health societies (Arlene Rosenbaum is past president of the International Society for Exposure Analysis).

<sup>2</sup> Bai, S.; Chiu, Y-C.; Niemeier, D.A. (In press) A comparative analysis of using trip-based versus link-based traffic data for regional mobile source emissions estimation. Atmospheric Environment. [Online at <http://dx.doi.org>. doi:10.1016/j.atmosenv.2007.05.051]

<sup>3</sup> Nadim, F.; Iranmahboob, J.; Holmen, B.; Hoag, G.E.; Perkins, C.; Dahmani, A.M. (2003) Application of computer models to assess the effects of emission-reduction programs for a sustainable urban air quality

### **Page E-3 Dispersion**

The “Dispersion” section says,

The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk.

There are numerous applications of dispersion models for this specific purpose in scholarly journals.

The “Dispersion” section concludes,

Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

The purpose of modeling is not to compare current ambient concentrations with future modeled concentrations associated with each of the alternatives. Rather, it is to compare the different alternatives with one another. Hence it is not necessary to have current background concentrations in order to compare the alternatives.

### **Page E-3 Exposure Levels and Health Effects**

The “Exposure Levels and Health Effects” section states

Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts.

The risk assessment process was not designed to quantify actual health risk in a community. Rather, screening level risk assessments can be used to compare potential impacts as one consideration in evaluating various alternatives.

EPA published the Air Toxics Reference Library in order to assist in the screening evaluation of air toxics exposures for health impacts. We suggest FHWA use the tiered approach described in this document to compare alternatives being considered for the Monroe Connector/Bypass. That library is available at [http://www.epa.gov/ttn/fera/risk\\_atra\\_main.html](http://www.epa.gov/ttn/fera/risk_atra_main.html). The library includes a tabulation of toxicity values for many air toxics. That table is available at <http://www.epa.gov/ttn/atw/toxsource/summary.html>.

The “Exposure Levels and Health Effects” section goes on to say

Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific

location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period.

Refinements in modeling technology have significantly improved the ability to handle non-sedentary mobility during the life of a given population. The National-scale Air Toxics Assessment (NATA: <http://www.epa.gov/ttn/atw/nata/index.html>) is one example of this extensively robust approach towards achieving a finer measure of exposure that reflects more life activities. The 70-year averaging time for carcinogenesis reflects the potential onset of an excess cancer that might result from exposure to a carcinogen under a given exposure scenario. Adjustments to reflect travel patterns and vehicle technology might provide useful information in predicting a central tendency exposure outcome. However, it would be unclear whether, and if so, how the result would improve the accuracy/protectiveness of the resulting risk characterization relative to a given population over a lifetime.

In a screening level evaluation, as noted in the Air Toxics Risk Assessment Reference Library (Volume 1) simplifying assumptions are used to save time and costs associated with the effort. In the interest of not overlooking a potential issue, the assumptions are conservative, for example, assuming that the person is exposed to the toxic air pollutant concentration continuously for 70 years. We recognize that this is not realistic, but it is a reasonable conservative assumption of the type that is used routinely in screening level risk evaluations. If the potential risk identified through this process is higher than is acceptable, a more careful evaluation using more realistic inputs can be carried out. However, in the interest of saving the sponsoring organization time and money, and in the interest of erring on the side of public health, such assumptions are used.

The “Exposure Levels and Health Effects” section continues:

There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts.

It is true that there is uncertainty in the toxicity estimates associated with air pollutants. This does not mean, however, that these benchmarks are without accuracy and thus not useful in risk predictions. Because the toxicity assessment process is designed to be conservative and protective of sensitive sub-populations, the resulting risk-based safe limits have been used internationally to protect human health. The uncertainty in hazard assessment is sound and reflects the best current peer-reviewed science.

If we did not use toxicity estimates, risk assessments would not be possible. Extrapolating from higher doses to lower doses is often required to develop toxicity

estimates because it would be inappropriate (for many reasons) to intentionally expose members of the general population to air toxics simply to obtain a more refined toxicity number. Instead, we might employ epidemiological studies carried out on people who are exposed during the course of their work, and then extrapolate from those levels to lower levels typical of the general public. In many cases, health and toxicity professionals do not have human exposure data at all, and must resort to exposing animals to evaluate the effect of chemicals. This also involves extrapolation, but it is done systematically and deliberately by toxicologists trained in the science. This process is described in the Air Toxics Reference Library.

EPA acknowledges that here are potential shortcomings, but screening level risk assessments are a useful way to compare alternatives and to identify potential risks that warrant further investigation with more sophisticated risk assessment techniques. Such evaluations are an opportunity to identify potential toxic exposures that could be mitigated or avoided, and to identify those exposures that are of no concern. While uncertainties do exist in risk assessment, they also exist in all other modeled outputs, such as travel demand and land use.

#### **Page E-5**

The second paragraph notes that, “Some recent studies have reported that proximity to roadways is related to adverse health outcomes – particularly respiratory problems.” The section goes on to say:

The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more reliable, comprehensive evaluation of the health impacts specific to this project.

It should be noted that there are hundreds of studies that have been published just since 2000 associating proximity to roadways with a number of adverse health effects including respiratory, birth and developmental effects, cardiovascular, premature mortality, and cancer. Baldauf et al. provided a summary of a number of these studies at the Transportation Research Board’s Air Quality and Land Use Planning Conference in 2007 (*Traffic Emission Impacts on Air Quality Near Large Roadways* Proceedings the Transportation Research Board Planning and Air Quality Conference, July 9-11, 2007). While these studies may not implicate specific pollutants as resulting in the adverse effects, they do implicate proximity as a key factor.

The 2004 statement on air pollution by the American Academy of Pediatrics states, “[...]ing of school and child care facilities should include consideration of proximity to roads with heavy traffic and other sources of air pollution. New schools should be located to avoid “hot spots” of localized pollution.”